

**ABSTRACT**

An active radio frequency cavity amplifier (ARFCA) is provided having a housing defining an input cavity and an output cavity; a plurality of transistors mounted to said housing, each of the plurality of transistors having an input lead and an output lead; a first RF power coupling mechanism disposed within the housing in proximity to the input cavity for coupling RF power from a source into the input cavity to generate an RF field; a first conducting assembly having a plurality of conductors each configured to contact a respective input lead of each of the plurality of transistors for coupling the RF field in the input cavity to the input leads of the plurality of transistors; a second conducting assembly having a plurality of conductors each configured to contact a respective output lead of the plurality of transistors for coupling the amplified RF power from the output leads of the plurality of transistors to the output cavity; and a second RF power coupling mechanism disposed within the housing in proximity to the output cavity for coupling amplified RF power from the output cavity to a load.